Specification Amendments

Please delete the paragraph on page 26 that is below claim 51:

~~It is to be understood that the above disclosure is not to be a basis of limiting scope of the future claims to be filed in connection with a non-provisional patent application which claims priority on this provisional filing; but represents subject matter from which the applicant intends to develop appropriate claim language in a formal patent application.~~

Please replace the paragraph beginning on page 2, line 1, with the amended paragraph, as follows:

This application is a continuation-in-part of U.S. Patent ~~Application~~ No. ~~09/384,084~~ 6,584,205 filed on August 26, 1999, entitled "Modulator Processing for a Parametric Loudspeaker System"; and a continuation-in-part of U.S. Patent ~~Application~~ No. ~~09/430,801~~ 6,850,623 filed on October 29, 1999, entitled "Parametric Loudspeaker with Improved Phase Characteristics" and also claims priority of Provisional Patent application No. 60/273,359 filed March 5, 2001.

Please replace the paragraph beginning on page 5, line 3, with the amended paragraph, as follows:

Another part of the pre-processing that can take place is the distortion correction. The distortion correction can include applying a square root to the signal to compensate for the second order distortion. This square root process can be applied to the audio input signal and/or an iterative envelope matching correction can be applied to the modulated signal to compensate for the second order distortion as predicted by the Berktay equation. These correction methods are described in detail in ~~pending~~ U.S. pPatent ~~applications Serial~~ No. ~~09/384,084~~6,584,205 entitled "Modulator Processing for a Parametric Loudspeaker System" filed on August 26, 1999 and International Patent No. PCT/US00/23392 with the same title, which are hereby incorporated by reference. This distortion correction produces significant processing overhead especially if it

is done iteratively. A considerable additional cost is also incurred because a signal processing chip or analog circuitry must be included in the speaker system to perform this function.

Please replace the paragraph beginning on page 7, line 15, with the amended paragraph, as follows:

FIG. 1 illustrates a parametric loudspeaker system, which receives an incoming audio signal 10 from an audio source such as a compact disk, radio signal or any other known electronic signal source. An ultrasonic carrier signal 20 is first modulated with the audio signal. In other words, the ultrasonic carrier has at least one sideband and represents a pre-encoded audio signal. Then distortion error correction or signal calibration is applied which corrects for the distortion produced in the parametric output. An ultrasonic amplifier 30 is used to amplify the modulated and corrected signal, which is applied to the ultrasonic emitter 40. The ultrasonic amplifier can be any type of linear or ultrasonic amplifier, including a Class B amplifier or a more efficient modified Class D power amplifier, as taught in copending PCT Patent Application Serial No. PCT/US01/21749 entitled "Power Amplification for Parametric Loudspeakers" filed on July 11, 2001, which is hereby incorporated herein by reference.

Please replace the paragraph beginning on page 15, line 29, with the amended paragraph, as follows:

The two parts of a switching modulator will now be discussed in further detail. The first part is a phase shifter. A single channel of audio input is passed through a phase shift network that derives two audio frequency channels, I and Q (256 and 258), that are 90 degrees out of phase from each other over some desired operating frequency range (e.g., 300Hz to 15KHz). This allows for the storage of the two phase-shifted signals on a CD. A phase sequence network 252 or Hilbert transformer generates both I and Q signals and requires approximately four op amps.

Please replace the paragraph beginning on page 17, line 22, with the amended paragraph, as follows:

FIG. 8 illustrates the directional nature of the parametric output. An ultrasonic amplifier and emitter 214 are directed toward a reflecting surface 216, such as a display. A large portion of the directional parametric waves are reflected to a listener 218 who hears the sound as though it is originating from the reflecting point on the display. Another set of local reflections 220 creates an omni-directional speaker near the reflecting point. In this case, the parametric output sounds as though it is virtually coming from the display. This example shows the parametric output being reflected against a display but it could also be reflected against a wall. The phenomenon related to a virtual point source speaker is described in further detail in U.S. Patent ~~Application~~ No. ~~09/159,443~~6,229,899 filed September 24, 1998 and entitled "Method and Device For Developing a Virtual Speaker Distant from the Sound Source".